Impact of pay for performance on quality of chronic disease management by social class group in England

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DECLARATIONS

Competing interests

None declared

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Summary

Objective To examine associations between social class and achievement of selected national audit targets for coronary heart disease (CHD), diabetes and hypertension in England before and after the introduction of a major pay for performance programme in 2004.

Design Secondary analysis of 2003 and 2006 national survey data for respondents with CHD and diabetes and hypertension.

Setting England.

Main outcome measure Achievement of national audit targets for blood pressure, blood glucose and cholesterol control.

Results There were no significant differences in achievement of blood pressure targets in individuals from manual and non-manual occupational groups with diabetes (2003: 65.9% v 60.3%, 2006: 67.6% v 69.7%) or hypertension (2003: 66.2% v 66.2%, 2006: 72.8% v 71.9%) before or after the introduction of pay for performance. Achievement of the cholesterol target was also similar in individuals from manual and non-manual groups with diabetes (2003: 52.5% v 46.6%, 2006: 68.7% v 70.5%) or CHD (2003: 54.3% v 53.3%, 2006: 68.6% v 71.3%). Differences in achievement of the blood pressure target in CHD [75.8% v 84.5%; AOR 0.44 (0.21-0.90)] were evident between manual and non-manual occupational groups after the introduction of pay for performance.

Conclusion The quality of chronic disease management in England was broadly equitable between socioeconomic groups before this major pay for performance programme and remained so after its introduction.

Introduction

Variations in the quality of healthcare have been extensively documented in the United States and United Kingdom.[1,2] These appear to have persisted despite considerable investment in quality improvement programmes in both countries over the past decade.[3] For example, people with chronic conditions on low incomes are less likely to receive recommended levels of care than those on higher incomes in the US.[4] Individuals with diabetes living in deprived areas in the UK have been found less likely to have records for HbA_{1c} concentration, HbA_{1c} values under 7.5% or under 10%, retinal

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screening or flu vaccination than those living in affluent areas.[5]

Pay for performance programmes are being adopted in a growing number of countries to expedite improvements in the quality of healthcare and to reduce variations in care. The Quality and Outcomes Framework (QOF), introduced in the UK in 2004, provides financial rewards to general practitioners for achieving a large number of evidence-based quality indicators and places considerable emphasis on the management of common cardiovascular conditions (356 of the 550 points available in the clinical domain are assigned to CHD, diabetes, stroke and hypertension).

The potential of pay for performance programmes to worsen healthcare inequities has been recognized.[6] Several studies have compared quality of care in deprived and affluent areas after the introduction of QOF.[7–9] These studies have generally found marginally lower achievement of quality indicators in deprived areas, with evidence of near attenuation of these differences in the second and third year of the contract.[10,11] However, the data used for these studies are derived from the financial administration system for QOF which has a number of limitations. The data contain no individual level data on variables such as age, sex, ethnicity and socioeconomic status. Further, no baseline data are available within the financial administration system to examine equity in healthcare before the introduction of the pay for performance scheme.

An assessment of the impact of QOF on equity in chronic disease management between socioeconomic groups using population-based survey data is therefore indicated. The main construct for examining healthcare equity in the UK is social class, which is based occupational grouping. The objective of this study was to examine associations between social class and achievement of established quality indicators for CHD, diabetes and hypertension before and after the introduction of this major pay for performance programme using data from the Health Survey for England.

Methods

Sampling and data collection

The Health Survey for England is an annual survey of people living in private households and is a primary mechanism for monitoring population health in England. The survey is conducted by the National Centre for Social Surveys and Research and University College London on behalf of the Department of Health for England. The methods of the survey are described in detail elsewhere.[12] In brief, interviewers obtained household, socioeconomic and personal details, information on health and illness, and health service use from respondents. A trained nurse took anthropometric measurements including height and weight and asked respondents about prescribed medications at a follow-up visit soon after the interview according to survey protocols. Blood pressure, HbA1c and total cholesterol were measured in respondents aged 16 years and older.

The 2003 and 2006 surveys were focused on cardiovascular disease risk factors and management. We selected any adult (aged 18 years or over) from the survey who reported a doctor confirmed diagnosis of diabetes, coronary heart disease (myocardial infarction or angina) or hypertension.

Variables

We examined intermediate clinical outcomes and use of medications as they applied to our population in each year. We applied targets set out in the Quality and Outcomes Framework for intermediate clinical outcomes. These are comparable to audit targets in that they are less stringent than treatment targets set out in national clinical guidelines in the UK and USA.[13,14]

For people with diabetes, these were blood pressure (BP) $\leq$145/85 mmHg, total cholesterol $\leq$5 mmol/L and HbA1c $\leq$7.5%. For coronary heart disease, these were blood pressure $\leq$150/90 mmHg and total cholesterol $\leq$5 mmol/L. BP $\leq$150/90 mmHg was used for hypertension. Our independent study variable was social class. We collapsed social class from six (I – professional, II – managerial and technical, IIIN – skilled non-manual, IIIM – skilled manual, IV – partly skilled, V – unskilled) into two occupational groupings (non-manual – I, II, IIIN and manual – IIIM, IV, V) for the analyses due to small numbers.

Data analysis

In each of the three disease subsets, percentages for medication usage and achievement of audit targets

Table 1
Achievement of audit targets and medication usage in CHD by occupational group

	Intermediate outcomes		*Prescribing*	
	Manual	Non-manual	Manual	Non-manual
	BP ≤ 150/90 mmHg		**Anti-hypertensives**	
% **2003**	77.0	78.1	66.1	60.3
AOR	0.95(0.26–3.51)	1	1.28(0.97–1.70)	1
% **2006**	75.8	84.5	58.2	58.6
AOR	0.44(0.21–0.90)	1	0.80(0.64–1.00)	1
	Cholesterol ≤ 5 mmpl/L		**Lipid-lowering drugs**	
% **2003**	54.3	53.3	56.7	60.3
AOR	0.71(0.18–2.81)	1	0.80(0.56–1.10)	1
% **2006**	68.6	71.3	74.5	71.1
AOR	0.86(0.36–2.05)	1	0.85(0.64–1.14)	1

AOR – adjusted odds ratio

were calculated within manual and non-manual groups. For achievement of audit targets, logistical regression was performed to generate odds ratios with 95% confidence intervals adjusted for age, gender, body mass index (BMI), duration of disease and treatment (numbers of medications prescribed). For use of medications, logistic regression was performed adjusting for age and gender. Our analyses were weighted to the general population in England and for non-response where indicated. All statistical analysis was performed using Stata 10.0 (Stata Corporation, Texas, USA).

Results

The number of respondents with diabetes was 611 in 2003 and 562 in 2006. The numbers with coronary heart disease was 861 in 2003 and 557 in 2006. For hypertension, the numbers were 3717 and 2996 in 2003 and 2006, respectively.

Coronary heart disease

In 2003, there was no significant difference in achievement of blood pressure target between respondents from manual and non-manual occupations (77.0% vs 78.1%). However, in 2006 manual respondents were less likely to achieve the blood pressure target than non-manual respondents (75.8% vs 84.5%; AOR 0.44 [0.21–0.90]). There were no significant differences in usage of anti-hypertensives between social class groups (Table 1). There were no significant differences between social class groups in achievement of the cholesterol target, with a large increase in the percentage achieving this target over time in both social groups (54.3%, 68.6% manual vs 53.3%, 71.3% non-manual in 2003 and 2006, respectively). No significant difference was found in usage of lipid lowering drugs between social class groups.

Diabetes

There was no significant difference in usage of anti-hypertensive medication or achievement of the blood pressure target between social class groups in 2003 and 2006. There were also no differences between social class groups in usage of lipid-lowering drugs or achievement of the cholesterol target. For HbA1c, achievement of the audit target was significantly lower in the manual compared to the non-manual group in 2003 (55.7% vs 71.2%; AOR 0.47 [0.28–0.80]). This difference in achievement was attenuated but not abolished in 2006 (59.7% vs 68.3%; AOR 0.66 [0.37–1.15]). However, this difference was not statistically significant. There were no differences in usage of oral hypoglycaemic agents between social class groups in either year.

Hypertension

No difference in usage of anti-hypertensives or achievement of blood pressure target was identified between respondents from manual and non-manual occupations.

Discussion

Principal findings

Achievement of audit targets and usage of secondary prevention medications for CHD, diabetes and hypertension was broadly similar in manual and non-manual occupational groups in England before and after the introduction of the Quality and Outcomes Framework.

Strengths and weaknesses of the study

This is the first national study to examine the impact of a pay for performance programme on healthcare equity using patient level data. Our

Table 2
Achievement of audit targets and medication usage in diabetes by occupational group

	Intermediate outcomes		*Prescribing*	
	Manual	Non-manual	Manual	Non-manual
	BP ≤ 145/85 mmHg		**Anti-hypertensives**	
% **2003**	65.9	60.3	52.8	47.1
AOR	1.32(0.86–2.02)	1	1.27(0.90–1.77)	1
% **2006**	67.6	69.7	52.1	47.0
AOR	0.88(0.55–1.42)	1	1.10(0.85–1.42)	1
	Cholesterol ≤ 5 mmpl/L		**Lipid-lowering agents**	
% **2003**	52.5	46.6	43.4	37.2
AOR	1.13(0.68–1.87)	1	1.30(0.87–1.91)	1
% **2006**	68.7	70.5	66.2	65.3
AOR	0.86(0.48–1.54)	1	0.96(0.70–1.31)	1
	HbA1c ≤ 7.5%		**OHAs**	
% **2003**	55.7	71.2	63.5	59.4
AOR	0.47(0.28–0.80)	1	1.18(0.84–1.66)	1
% **2006**	59.7	68.3	71.4	61.7
AOR	0.66(0.37–1.15)	1	1.34(0.68–1.23)	1

AOR – adjusted odds ratio; OHAs – oral hypoglycaemic agents

findings are derived from a comprehensive population-based interview survey. However, comparing outcomes across time may introduce bias, given that there could be systematic differences in the respondents sampled in the different survey years. Identification of cases relied on respondents self-reporting of a 'doctor confirmed' diagnosis of CHD, diabetes and hypertension. Collapsing our social class variable into two occupational groupings (manual, non-manual) may have masked differences in outcomes between respondents at the either end of this spectrum, i.e. between those in professional and unskilled occupations. Despite this, some of the comparisons made may not have reached statistical significance due to the small numbers in our subgroups. We were unable to adjust for certain patient factors, such as the presence or severity of complications, which may have been confounders in the relationship between our independent variable and outcome measures. We employed targets adopted in the Quality and Outcomes Framework. These are less stringent than those set out in national clinical guidelines in the UK and USA.[13,14]

Table 3
Achievement of audit target and medication usage in hypertension by occupational group

	Intermediate outcomes		*Prescribing*	
	Manual	Non-manual	Manual	Non-manual
	BP ≤ 150/90 mmHg		**Anti-hypertensives**	
% **2003**	66.2	66.2	47.5	43.4
AOR	1.00(0.84–1.20)	1	1.14(1.00–1.31)	1
% **2006**	72.8	71.9	44.6	41.2
AOR	1.02(0.83–1.26)	1	1.03(0.92–1.20)	1

AOR – adjusted odds ratio

Comparisons with previous research

Few studies have examined the impact of pay for performance programmes on different socioeconomic groups using individual level data. Our findings are consistent with several UK studies have examined equity in quality of care after the introduction of QOF using area-based measures of socioeconomic status. These have found lower achievement on quality measures in deprived areas than in affluent areas but the magnitude of the difference has generally been modest. For example, we have previously found that the percentage achievement of treatment targets for diabetes in deprived and affluent areas in the UK were 57% vs 61% for HbA1c, 70% vs 71% for blood pressure and 70% vs 73% for cholesterol.[15] However, there is increasing evidence that inequities in care between age, gender and ethnic groups have persisted after the introduction of this pay for performance programme in the UK.[16–18]

Implications for policy

The quality of chronic disease management in England appears to have remained broadly equitable between socioeconomic groups after the introduction of a major pay for performance programme. While these findings are reassuring, policy-makers and purchasers of healthcare should ensure that all such programmes are monitored for possible negative impacts on healthcare equity. Despite improvements seen between 2003 and 2006, the management of CHD, diabetes and hypertension remains suboptimal in many patients.

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